

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Presently amended) A method for restoring persistently stored objects of an object-oriented environment established ~~on~~ in a computer system having a volatile memory and a persistent storage, the method comprising the steps of:

retrieving from said persistent storage a first list ~~containing~~ comprising first references to segments, ~~that is, pieces of memory,~~ stored ~~on~~ in said persistent storage;

retrieving all segments referenced by said first references and storing them in said volatile memory;

saving in said first list the difference between ~~the~~ an old memory address, at which the segment used to reside in the volatile memory, and ~~the~~ a new memory address at which said segment is stored;

retrieving from said persistent storage a second list ~~containing~~ comprising second references to blocks, ~~that is, portions of said segments,~~ whereby said blocks contain an object description;

determining ~~the~~ which segment ~~that~~ contains said block referenced by a particular element of said second list;

creating ~~a new~~ an object in said volatile memory using said object description from said segment and saving ~~the~~ a new address of said created object in said second list in volatile memory;

initializing said new object with ~~the~~ values taken from said object description; and determining ~~the~~ said new addresses of said new object ~~objects~~ referenced by the newly-created object and

setting ~~the~~ said new address as the reference in ~~the newly-created~~ said new object.

2. (Previously presented) The method according to claim 1, whereby said first list and/or said second list are ordered lists.

3. (Presently amended) The method according to claim 1 or 2, whereby said first list and/or said second list are organized ~~like~~ as a B-tree.

4. (Presently amended) The method according to claim 1 ~~one of the preceding claims~~, whereby the elements of said first ordered list are indexed by said first references.

5. (Presently amended) The method according to Claim 1 ~~one of the preceding claims~~, whereby each of said first references corresponds to the old memory address at which the respective segment used to reside in the volatile memory.

6. (Presently amended) The method according to Claim 1 ~~one of the preceding claims~~, whereby the elements of said second ordered list are indexed by said second references.

7. (Presently amended) The method according to one Claim 1 ~~one of the preceding claims~~, whereby each of said second references corresponds to the old memory address at which the respective block used to reside in said volatile memory.

8. (Presently amended) The method according to Claim 1 ~~one of the preceding claims~~, whereby said object description is formed by a collection of values owned by an object for the variables belonging to its class.

9. (Presently amended) The method according to Claim 1 ~~one of the preceding claims~~, whereby for each value in said object description of variables having a variable length the method further comprising the steps of:

allocating a number of blocks that allows to keep the actual value of the variable having variable length;

creating a linked list of said number of blocks;
saving said value into said number of blocks; and
storing a reference to the head of the linked list in said object description.

10. (Presently amended) The method according to claim 1 ~~one of the preceding claims~~, whereby determining the segment that contains said block referenced by a particular element of said second list comprises the step of searching in said first ordered list (segment map) for the segment that contains said portion of said segment (block) referenced by said element.

11. (Presently amended) The method according to claim 1 ~~one of the preceding claims~~, whereby determining the segment that contains said block referenced by a particular element of said second list further comprises the step of calculating the new address by adding the reference to said block (that corresponds to the old memory address) and said difference between said old memory address and said new memory address.

12. (Presently amended) The method according to claim 1 ~~one of the preceding claims~~, whereby determining the new addresses of objects referenced by the newly created object comprises the step of searching in said second list (object map) for the element said contains the new address of the referenced object, that is referenced by the old address of the respective object description.

13. (Presently amended) The method according to claim 1 ~~one of the preceding claims~~, whereby for all references to heads of linked lists the method further comprising the steps of:

reading all blocks of said linked list;

allocating memory to store the value of the variable retrieved from the linked list;

and

storing the value in said allocated memory.

14. (Presently amended) A method for persistently storing objects of an object-oriented environment established on a computer system having a volatile memory and a persistent storage, the method comprising ~~the~~ steps of:

allocating in said volatile memory, segments, ~~that is, pieces of memory~~;
creating a first list ~~(segment map) containing~~ comprising first references to said segments;
creating a second list ~~(object map) containing~~ comprising second references to blocks, ~~that is, wherein the blocks are~~ portions of said segments;
allocating a block of one of said segments,
creating an object description for an object by saving ~~the~~ values owned by the object of the variables belonging to its class into said allocated block;
adding a new element to said second list containing the particular reference to said ~~created~~ object description;
determining the address of ~~the~~ another object description of another object referenced in said object;
setting the address of said respective object description as the reference in the created object description;
storing said second list ~~(object map)~~ on said persistent storage;
storing the segments referenced by said first list ~~(segment map)~~ on said persistent storage;
and
storing said first list ~~(segment map)~~ on said persistent storage.

15. (Previously presented) The method according to claim 14, whereby said first list and/or said second list are ordered lists.

16. The method according to claim 14 ~~or 15~~, whereby said first list and/or said second list are organized ~~like~~ as a B-tree.

17. (Presently amended) The method according to claim one of the claims ~~14 to 16~~, whereby the elements of said first ordered list are indexed by said first references.

18. (Presently amended) The method according to claim one of the claims ~~14 to 17~~, whereby each of said first references corresponds to the current memory address at which the respective segment resides in the volatile memory.

19. (Presently amended) The method according to claim one of the claims ~~14 to 18~~, whereby the elements of said second ordered list are indexed by said second references.

20. (Presently amended) The method according to claim one of the claims ~~14 to 19~~, whereby each of said second references corresponds to the current memory address at which the respective block resides in said volatile memory.

21. (Presently amended) The method according to claim one of the claims ~~14 to 20~~, whereby determining the address of the object description of another object referenced in said object comprises the step of searching in said second ordered list (~~object map~~) for the element said contains the address of the object description of the referenced other object.

22. (Presently amended) The method according to claim one of the claims ~~14 to 20~~, whereby determining the address of the object description of another object referenced in said object comprises ~~the~~ a step of using ~~a~~ by a reference to the respective object description provided by each object.

23. (Presently amended) The method according to claim one of the claims ~~14 to 22~~, whereby for each value of variables ~~having~~ comprises a variable length the method further comprises ~~the~~ steps of:

allocating a number of portions (~~blocks~~) of one of said pieces of memory (~~segments~~) that allows to keep the actual value of the variable length variable;

creating a linked list of said number of portions (~~blocks~~);

saving value into said number of portions (~~blocks~~); and
storing a reference to the head of the linked list in said object description.

24. (Presently amended) A computer program product stored on a computer usable medium, comprising computer readable program ~~means instructions for; causing a computer to perform a method according to anyone of the preceding claims 1 to 23.~~

allocating in said volatile memory segments;

creating a first list comprising first references to said segments;

creating a second list comprising second references to blocks;

allocating a block of one of said segments,

creating an object description by saving values owned by the object of the variables belonging to its class into said allocated block;

adding a new element to said second list containing the particular reference to said created object description;

determining the address of the object description of another object referenced in said object;

setting the address of said respective object description as the reference in the created object description;

storing said second list on said persistent storage;

storing the segments referenced by said first list on said persistent storage; and

storing said first list on said persistent storage.